BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical/Electronic Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical/Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering
Unit number and title	**Unit 20: Analogue Electronic Circuits**
Learning aim(s)	**C:** Modify a single function analogue electronic circuit to meet given parameters as widely undertaken in industry
Assignment title	2 Modification of a single function analogue electronic circuit to meet a given specification.
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	Your manager has been pleased with the way that you have carried out and recorded the results of your investigations into single function analogue electronic circuits as part of your apprenticeship. Your manager would now like you to investigate one of the circuits in detail and then modify it to meet a given specification. The circuit is needed as part of a product for an important client, so you must document your work carefully and safely construct a functioning version of the modified circuit.

Task 1	You are going to interpret a given client brief that is based on one of the circuits you investigated in Assignment 1 and then select components to construct the analogue circuit to meet the given client brief. You should systematically simulate, construct, test and fault-find the circuit to make sure that it operates as intended. **To do this:** You need to complete a series of activities to make sure that the modified circuit meets the client brief. As a starting point you should use the same layout for the circuit you are modifying as you previously investigated in Assignment 1. You will need to produce a development log for the circuit that includes evidence of planning the modification of your given circuit. You will need to: a) calculate key component values for the circuit to meet the given specification

	b) simulate the circuit using your component values, and modify as necessary c) design a layout for the permanent construction of the circuit d) During these activities (a to c) you should consider any alternative solutions giving reasons for your preferred choice. **You will also need to:** Construct a one-off version of your modified circuit using a permanent construction method. You will construct the circuit safely, taking into account appropriate risk assessments for your workshop You will also need to test the circuit to check that it meets the required specification. You will use a range of resources to complete this including diagrams and test equipment. You should record and interpret the results of tests in your development log.
Checklist of evidence required	A developmental log detailing the design, construction and testing of a prototype circuit. The evidence should include calculations, component selection, schematic capture, simulation, circuit layout and construction plans, one or more observation and/or witness statements and a formal assessment of the final permanently constructed circuit. The log could also include annotated photographs of various stages of the construction and testing and of alternative design solutions.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
20/C.D2	Refine, during the process, the operation of a modified single function circuit to improve its performance.
20/C.M4	Develop accurately a modified single function circuit that operates as intended, while documenting alternative solutions.
20/C.P4	Design a modified single function analogue circuit, using calculations of component values and simulation methods.
20/C.P5	Build and test safely a permanently constructed modified single function circuit.

Sources of information to support you with this Assignment	**Books** Electronics: A systems approach; Storey N; Prentice Hall (2013); ISBN-13: 978-0273773276 Practical Electronics for Inventors; Scherz P Monk S; McGraw-Hill Education TAB (2016); ISBN-13: 978-1259587542 Electronics; Sparkes JJ et al; Nelson Thornes Ltd (2003); ISBN 0 7487 7036 4 The Art of Electronics; Horowitz P, Hill W; Cambridge University Press (2015); ISBN-13: 978-0521809269 Learning the Art of Electronics: a hands-on lab course; Hayes TC, Horowitz P; Cambridge University Press (2016); ISBN-13: 978-0521177238 BTEC Nationals Engineering Student Book + Activebook: For the 2016 Specifications (BTEC Nationals Engineering 2016); Buckenham A et al; Pearson Education (2016); ISBN-13: 978-1292141008 Electronics; Sparkes JJ et al; Nelson Thornes Ltd (2003); ISBN 0 7487 7036 4 **Websites** http://www.electronics-tutorials.ws/ **Above are some examples of websites. Further useful resources may be found at** http://qualifications.pearson.com/en/support/published-resources.html#step1
Other assessment materials attached to this Assignment Brief	*Client brief, circuit diagrams, catalogues, data sheets.*